UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/834,964	04/13/2001	Dipak Shah	PETAP003	6295

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EXAMINER
GREY, CHRISTOPHER P

ART UNIT	PAPER NUMBER
2667	

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO 90C (Rev 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/834,964	SHAH ET AL.
	Examiner	Art Unit	
	Christopher P Grey	2667	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2005*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

Response to Amendment

1.   Responsive to the amendment received on Januaary 24, 2005, amended claim

1, 22, 24 and 25 are entered as requested.

Response to Arguments

2.   Applicant's arguments filed January 24, 2005 have been fully considered but they

are not persuasive.

The applicant argued that the cited art does not disclose Applicants claimed "said

at least one switch simultaneously delivers the associated multicast payload to a

plurality of said destination queues"

The examiner maintains that the same limitation, in its broadest term, is already

discussed in the rejection of claims 2, 13 and 22, wherein Hughes discloses a switch

fabric (element 305 in fig 3) transmitting multicast data to a plurality of destination

egress ports (elements 306 a-n). Hughes discloses a number of schedulers (element

316 a-n) within the switch fabric where each scheduler receives a switch frame every

clock tick (Col 7 lines 59-Col 8 line 9). Furthermore, Hughes discloses the switch planes

(elements 309 a-n) and schedulers operating synchronously (simultaneously) with one

another (Col 8 lines 10-21), where the plurality of switch planes would transmit an

outgoing switch frame to a plurality of destination egress ports synchronously.

3.   The text of those sections of Title 35, US Code not included in this action can be found in the prior office action.

4.   Claims 1-25 and are rejected under 35 U.S.C. 102 (b) as being clearly anticipated by Hughes et al. (Patent No. 6747971)

Regarding claim 1, Hughes et al. shows a switching apparatus, comprising:

At least one multicast source queue for storing blocks of data, each block including at least a multicast payload, as disclosed in Col 3 line 66- Col 4 line 5 and the abstract.

At least one switch operatively connected to said multicast source queue, said at least one switch including at least a scheduler that schedules granting of multicast requests, as disclosed in Col 7 lines 15-21 and the abstract.

A plurality of destination queues operatively connected to said at least one switch, said destination queues receiving, via said at least one switch, at least the multicast payload for the multicast requests that that have been granted by said scheduler, as disclosed in Fig 7, Col 15 lines 54- Col 16 line 13.

Wherein, when issued to the scheduler, each of the multicast requests operates to request switching the associated multicast payloads through said at least one switch to particular ones of said destination queues, and wherein each of the multicast requests are issued in advance of sending the associated multicast payloads to said at least one switch, and only after a particular multicast request is at least partially granted does the associated multicast payload get transmitted from the associated multicast source

queue to said at least one switch, is disclosed in Fig 6, Col 4 lines 24-30 and Col 15

lines 39- 58

Hughes et al. shows a switching apparatus, wherein at least one switch

simultaneously delivers the associated multicast payload to a plurality of destination

queues, as disclosed in Fig 7 Col 15 line 54- Col 16 line13.

Regarding claim 3, Hughes et al. shows a switching apparatus, wherein when the

particular multicast request is at least partially granted by scheduler, a grant is provided

to the associated multicast source queue, as disclosed in Col 4 line 24- 30 and Col 15

lines 27-29.

Regarding claim 4, Hughes et al. shows a switching apparatus, wherein the grant

indicates a set of said destination queues that are scheduled to simultaneously receive

the associated multicast payload, as disclosed in Fig 7 Col 15 line 27- Col 16 line 13.

Regarding claim 5, Hughes et al. shows a switching apparatus, wherein the grant

is temporarily stored at said at least one switch for subsequent use in configuring said at

least one switch to deliver the associated multicast payload to the set of said destination

queues, as disclosed in Col 15 lines 27-30 and Col 15 line 39- Col 16 line 13.

Regarding claim 6, Hughes et al. shows a switching apparatus, wherein the

associated multicast payload is sent to said at least one switch from the associated

multicast source queue only once for each of the multicast requests that have been granted, yet is simultaneously delivered to a plurality of said destination queues, as disclosed in Col 15 lines 39- Col 16 line13.

Regarding claim 7, Hughes et al. shows a switching apparatus as recited in claim 1, wherein said multicast source queue is a virtual queue, and wherein said destination queues are virtual queues, as disclosed in Col 3 line 66- Col 4 line10 and Col 15 line 59- Col 16 line13, where the limitations for a normal queue are anticipated for a virtual queue.

Regarding claim 8, Hughes et al. shows a method (disclosed in the summary of the invention) for multicasting data held in a sending virtual queue through a switching apparatus to receiving virtual queues, with the method comprising:

Sending a multicast request from the sending virtual queue to the switching apparatus, the multicast request requesting to transfer a common payload of data to a plurality of the receiving virtual queues, as disclosed in Col 3 line 66- Col 4 line10 and Col 15 line 59- Col 16 line13, where the limitations disclosed with a normal queue are anticipated for a virtual queue;

Subsequently sending the common payload of data from the sending queue to the switching apparatus after the sending queue receives notification that the multicast request has been at least partially granted, as disclosed in Col 4 line 24- 30 and Col 15 lines 27-29;

Configuring the switching apparatus for the multicast request; and thereafter

concurrently transmitting the common payload of data through the configured switching

apparatus to a plurality of the receiving virtual queues, as disclosed in Col 16 lines 1-

13.

Regarding claim 9, Hughes et al. shows when a grant is produced when the

multicast request has been at least partially granted, as disclosed in Col 4 line 24- 30

and Col 15 lines 27-29, and;

Configuring of the switching apparatus is in accordance with the grant, as disclosed in

elements 604, 606 and 606 in Fig 6 and Col 15 lines 39-58.

Regarding claim 10, Hughes et al. shows where sending operates to send the

multicast request to the switching apparatus only once and to send the common

payload of data from the sending queue to the switching apparatus only once, unless

the multicast request is initially not completely granted, as disclosed in Col 3 line 66- Col

5 line 17 and Col 16 line 1- 13.

Regarding claim 11, Hughes et al. shows where the multicast request requests to

transfer the common payload of data to N of the receiving virtual queues, where N is an

integer, and wherein said sending operates to send the multicast request from the

sending virtual queue to the switching apparatus substantially less than N times and to

send the common payload of data from the sending virtual queue to the switching

apparatus less than N times, as disclosed in Col15 line 39- Col 16 line 13.

Regarding claim 12, Hughes et al shows the common payload data is sent to the

switching apparatus after the associated multicast request has been at least partially

granted such that the switching apparatus need not store the common payload data

while awaiting at least partial granting of the multicast request, as disclosed in Col 15

lines 39-53 and Col 4 lines 24-30.

Regarding claim 13, Hughes et al shows a method for multicasting data held in a

sending virtual queue through a switching apparatus to receiving virtual queues, said

method comprising:

sending a multicast request to the switching apparatus, the multicast request requesting

to transfer a common payload of data to a plurality of the receiving virtual queues, as

disclosed in Col 3 line 66- Col 4 line10 and Col 15 lines 39-41;

scheduling a grant of the multicast request to at least a certain plurality of the receiving

virtual queues as disclosed in Col 4 lines 21- 30;

saving the grant at the switching apparatus;

sending the grant from the switching apparatus to the sending virtual

queue, as disclosed in Col 15 lines 27-38 ;

sending the common payload of data from the sending virtual queue to

the switching apparatus after the sending virtual queue receives the grant

from the switching apparatus, as disclosed in element 604 and 606 in Fig6 and Col 15

lines 39-44;

configuring the switching apparatus in accordance with the saved grant; and thereafter

concurrently transmitting the common payload data from the switching apparatus to

each of the certain plurality of the receiving virtual queues, as disclosed in element 607

in Fig 6 and Col 15 line 59- Col 16 line 18.

Regarding claim 14, Hughes et al shows duplication of the payload data occurs

in the switching apparatus, as disclosed in Col 5 line 64- Col 6 line 3.

Regarding claim 15, Hughes et al shows configuring occurs when the switching

apparatus receives the common payload data, as disclosed in Col 15 line 59- Col 16

line 13.

Regarding claim 16, Hughes et al shows only a single multicast request is

required to send the common payload data to the certain plurality of the receiving virtual

queues, as disclosed in Col 3 line 66- Col 4 line10 and Col 15 line 54-58.

Regarding claim 17, Hughes et al shows the switching apparatus comprises a

scheduler and a switching device, as disclosed in Col 7 lines 15- 21.

Regarding claim 18, Hughes et al shows for the multicast request, the common

payload data is sent only once from the sending queue to the switching apparatus, as

disclosed in Col 15 lines 39-44.

Regarding claim 19, Hughes et al shows more than half the time, a given

multicast request is sent only once from the sending virtual queue to the switching

apparatus, as disclosed in Col 4 lines 53- Col 5 line 17.

Regarding claim 20, Hughes et al shows the multicast request serves to send the

common payload of data to N of the receiving virtual queues, where N is an integer, and

wherein, on average, a given multicast request is sent substantially less than N times

from the sending virtual queue to the switching apparatus, as disclosed in Col 15 line

39- Col 16 line 13.

Regarding claim 21, Hughes et al shows the grant includes a grant bitmap, as disclosed

in Fig 5 Col 9 lines 43-47 and Col 6 lines 38-40 and Col 7 lines 15-25;

and wherein said sending of the common payload of data from the sending queue to the

switching apparatus operates in accordance with the grant bitmap, as disclosed in Col

15 lines39-44.

Regarding claim 22, Hughes et al shows a method for multicasting data held in a

sending virtual queue through a switching apparatus to receiving virtual queues, said

method comprising:

receiving a multicast request to the switching apparatus, the multicast request

requesting to transfer a common payload of data from the sending virtual queue to a

plurality of the receiving virtual queues, as disclosed in Col 3 line 66- Col 4 line 10 and

Col 15 lines 39-41;

scheduling a grant of the multicast request to at least a certain plurality of the receiving

virtual queues, as disclosed in Col 4 lines 21- 30;

saving the grant at the switching apparatus; and sending the grant from the switching

apparatus to the sending virtual queue, Col 15 lines 27-38.

The cell is then switched to the egress ports (Col 15 lines 54-58).

Each switch plane receiving switch frames from the ingress ports (Col 7 line 59- Col 8

line 9).

The grant is processed at the scheduler which is located within the switch fabric (Col 15

lines 20-38).

The cell is then switched to the egress ports (Col 15 lines 54-58).

receiving the common payload of data at the switching apparatus from

the sending virtual queue, as disclosed in Col 15 lines 39-44;

configuring the switching apparatus in accordance with the saved

grant', and thereafter concurrently transmitting the common payload data from the

switching apparatus to each of the certain plurality of the receiving virtual

queues, as disclosed in element 607 in Fig 6 and Col 15 line59- Col 16 line18.

Regarding claim 24, Hughes et al shows a method that further

comprises;

discarding (disclosed as processed in the reference) the saved grant following during or

after said transmitting of the common payload data, as disclosed in Col 15 lines 27- 41.

Regarding claim 25, Hughes et al shows the saved grant comprises a

grant bitmap as disclosed in Fig 5 Col 9 lines 43-47 and Col 6 lines 38-40 and Col 7

lines 15-25.

4.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

5.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Christopher P Grey whose telephone number is

(571)272-3160. The examiner can normally be reached on 6:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chi Pham can be reached on (571)272-3179. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Christopher Grey
Examiner
Art Unit 2667

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